

IN THE CLAIMS:

Claim 1. (currently amended) A bucket (12) for a mechanical shovel (10), the bucket having a hollow body (16) provided with an inlet (14) for receiving material into its interior and an outlet (15) for discharging material therefrom, the bucket having, secured to the body, a door (18) which is movable relative to the body between a closed condition in which it closes the outlet of the bucket so that material cannot be discharged therefrom, and an open condition in which it permits discharge under gravity of material from the bucket, the bucket also including at least one buffering device (22) operatively connected between the body and the door of the bucket for buffering movement of the door relative to the body,

the bucket being characterized in that each buffering device is in the form of a working fluid-containing telescopically extensible and retractable piston-and-cylinder assembly (22) for containing a working liquid including a cylinder (38) and a piston (36) longitudinally slidably received in the cylinder, the piston having a piston rod (39) projecting longitudinally from an only one end of the cylinder and a piston head (42) located in the cylinder and slidably sealingly engaging the wall (43) of the cylinder, two compartments (64, 66) containing for the working fluid liquid being defined respectively between the piston head and the respective opposite ends of the cylinder, the piston-and-cylinder assembly being operatively connected between the body and the door such that opening of the door causes the piston-and-cylinder assembly to retract and closing of the door causes it to extend, the

piston-and-cylinder assembly also including a fluid flow control assembly (72) via which the two compartments are in fluid flow communication with each other, the fluid flow control assembly being constructed and arranged to cause fluid liquid flow through the fluid flow control assembly from the compartment (64) remote from the end of the cylinder from which the piston rod projects to the compartment (66) adjacent the end of the cylinder from which the piston rod projects during opening of the door and to cause throttled fluid liquid flow through the fluid flow control assembly from the compartment adjacent the end of the piston from which the piston rod projects to the compartment remote from the end of the cylinder from which the piston rod projects during closing of the door, which throttled flow is throttled relative to the fluid liquid flow during opening of the door, such that, in use,

movement of the door towards its closed condition is buffered relative to movement of the door towards its open condition and
the total volume of the two compartments decreases when the door moves towards its open condition and increases when it moves towards its closed condition.

Claim 2. (currently amended) A bucket as claimed in Claim 1, characterized in that the fluid flow control assembly includes a non-return valve (78) permitting flow of fluid liquid therethrough ~~the flow control assembly~~ only during opening of the door, and a throttle device (82) for throttling fluid liquid flow through the flow control assembly during closing of the door.

Claim 3. (currently amended) A bucket as claimed in Claim 2, characterized in that the throttle device is constructed to permit adjustment of the fluid liquid flow rate through the flow control assembly, to permit adjustment of the degree of buffering.

Claim 4. (currently amended) A bucket as claimed in Claim 2, characterized in that the fluid flow control assembly includes a pressure-relief valve (86) for overriding the action of the throttling device when the pressure of the fluid liquid upstream of the throttling device ~~as it flows through the flow control assembly~~ during closing of the door exceeds a predetermined threshold pressure, to discontinue the throttling.

Claim 5. (previously presented) A bucket as claimed in claim 1, characterized in that the door is hingedly secured to the bucket, such that it hinges between its closed condition and its open condition, with the cylinder and the projecting end of the piston rod respectively being provided with securing formations (52, 62) by means of which the piston-and-cylinder assembly is hingedly secured in position between the body and the door.

Claim 6. (previously presented) A bucket as claimed in claim 1, characterized in that the fluid flow control assembly is located outside the interior of the cylinder of the piston-and-cylinder assembly.

Claim 7. (previously presented) A bucket as claimed in Claim 1, characterized

in that the fluid flow control assembly is located in the interior of the cylinder of the piston-and-cylinder assembly.

Claim 8. (previously presented) A bucket as claimed in claim 1, characterized in that the bucket includes a releasable latch (19) for retaining the door in its closed condition.

Claims 9. to 12. (cancelled)

Claim 13. (previously presented) A buffering device (22) for buffering movement of a door (18) of a bucket (12) for a mechanical shovel (10), the bucket having a hollow body (16) provided with an inlet (14) for receiving material into its interior and an outlet (15) for discharging material therefrom, the door being secured to the body to be movable relative to the body between a closed condition in which it closes the outlet of the bucket so that material cannot be discharged therefrom, and an open condition in which it permits discharge under gravity of material from the bucket, the buffering device being operatively connectable between the body of the bucket and the door for buffering movement of the door relative to the body, the buffering device including a telescopically extensible and retractable piston-and-cylinder assembly (22) for containing a working liquid, comprising a cylinder (38) and a piston (36) longitudinally slidably received in the cylinder, the piston having a piston rod (39) projecting longitudinally from only one end of the cylinder and a piston head (42) located in the cylinder and slidably sealingly engaging the wall (43) of the

cylinder, two compartments (64, 66) for the working liquid being defined respectively between the piston head and the respective opposite ends of the cylinder, the piston-and-cylinder assembly being operatively connectable between the body and the door such that opening of the door causes the piston-and-cylinder assembly to retract and closing of the door causes it to extend, and a fluid flow control assembly (72) via which the two compartments are in fluid flow communication with each other, the fluid flow control assembly being constructed and arranged to cause liquid flow through the fluid flow control assembly from the compartment (64) remote from the end of the cylinder from which the piston rod projects to the compartment (66) adjacent the end of the cylinder from which the piston rod projects during opening of the door and to cause throttled liquid flow through the fluid flow control assembly from the compartment adjacent the end of the piston from which the piston rod projects to the compartment remote from the end of the cylinder from which the piston rod projects during closing of the door, which throttled flow is throttled relative to the liquid flow during opening of the door, such that, in use,

movement of the door towards its closed condition is buffered relative to movement of the door towards its open condition and

the total volume of the two compartments decreases when the door moves towards its open condition and increases when it moves towards its closed condition.